

*REPORT ON THE JOINT CROSS-BORDER EMC AND LVD MARKET
SURVEILLANCE CAMPAIGN (2015)*

LED Floodlights

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EMC & LVD ADCO WORKING GROUP
Joint EMC & LVD Market Surveillance Campaign 2015



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1. Background Information

1.1. Reasons for the campaign

LED floodlights are lighting products which have lately been widely adopted in Europe by both the economic operators and the end-users. Floodlights using halogen bulbs are rapidly being replaced by their more efficient LED counterparts. In normal households floodlights are commonly used e.g. to illuminate pedestrian ways, playing fields, exteriors of buildings/houses and car shelters. Floodlights can also be used in general decoration and highlighting of buildings, gardens and landscape. When used to illuminate front doors of the house or in other general safety or security related application, the LED floodlights are often equipped with a passive infrared (PIR) motion sensor.

It can be stated and has been verified that LED floodlights are "new technology products" that are of special interest both from safety and from EMC point of view. Lately several LED floodlights which do not comply with requirements of the EMC and LVD Directives have been found from the European market.

Due to the aforementioned facts both the LVD Administrative Cooperation Working Group ('LVD ADCO') and the EMC Administrative Cooperation Working Group ('EMC ADCO') proposed to the Commission that one of the joint enforcement activities ('JA') in the area of harmonised products in 2015 (Call Number 124/G/ENT/IMA/14/1129 - Joint enforcement actions under the multi-annual action plan for market surveillance of products in the EU) could be LED Floodlights. The focus of the project would be on LED floodlights for fixed installation as well as portable and rechargeable LED floodlights.

The proposal for JA was submitted on the 16th of December 2014. In June 2015 an acceptance letter (dated 25th June 2015) was received from the Commission. The JA was accepted as it was planned and presented in the project application (scope, timing, budget, deliverables, and partners). As high evaluation points as 95 out of 100 were awarded for the joint action. The final grant agreement (S12.715516) was signed on the 23rd of December, 2015. Hence, the joint action officially started on the 1st of January 1, 2016. The JA is coordinated by the former LVD ADCO chairman (Tukes).



Fig.1. Examples of the LED floodlights to be tested in the JA.

1.2. Purpose and overview of the campaign

The primary purpose of the campaign was to assess both the technical and administrative compliance of the LED floodlights ("samples") taken from the European market, with the provisions of both the EMC (2004/108/EC) and LV (2006/95/EC) Directives.

The Joint Action aimed at verifying

- Safety risks associated with the usage of non-compliant LED floodlights
- Amount of disturbance caused by non-compliant LED floodlights
- Administrative non-compliances

The Joint Action also targeted to

- Find out possible correlations between safety and EMC shortcomings in the tested LED floodlights
- Map out the European market for LED floodlights
- Increase the collaboration of LVD and EMC market surveillance authorities
- Enhance the role of ADCOs in market surveillance work

Administrative compliance was checked against

- CE marking,
- Declaration of Conformity ('DoC'),
- Traceability (name or registered trademark and address of the manufacturer/importer),
- Identification (type, batch or serial number),
- Instructions and safety information (in the language as determined by MSA)
- Intended use¹
- Technical Documentation ('TD')

For the purposes of this campaign technical compliance with the EMC and LVD essential requirements² was carried out by testing against a relevant harmonised standard³.

The campaign was also intended to provide MSA with an opportunity to participate in EMC and LVD market surveillance, to improve the exchange of information and to raise economic operator and consumer's awareness of the need for conformity with the requirements of the EMC and LVD Directives.

It was agreed that the results of the campaign will be published widely throughout Europe and the other countries where the products originate.

¹ Referred to Article 9.4 of the EMC 2004/108/EC

² Only EMC emissions

³ LED floodlight will be assessed against harmonized standards indicated in the DoC (if available). If no DoC was available assessment should be carried out against EN 55015, EN 61000-3-2, EN 60598-2-5:1998 (EN 60598-1:2008 + A11:2009). For further details please see section 6.

1.3. Participation in the campaign

The total of 20 authorities from 17 Member States/EFTA countries took part in the JA

Full partners (partly funded from the JA):

- Participant 1 Tukes (FI)
- Participant 2 SNESB (SE)
- Participant 3 ESTI (CH)
- Participant 4 Mannvirkjastofnun (IS)
- Participant 5 SAMTS (BG)
- Participant 6 Not used
- Participant 7 Bundesnetzagentur (DE)
- Participant 8 EMS (CY)
- Participant 9 FFII (ES)
- Participant 10 ILNAS (LU)
- Participant 11 Danish Safety Tech Auth. (DK)
- Participant 12 DSB (NO)
- Participant 13 BAKOM (CH)
- Participant 14 AGENTSCHAP TELECOM (NL)
- Participant 15 NVWA (NL)
- Participant 16 Regierung von Oberbayern (DE)

Collaborating partners (outside the funding scheme):

- 17 Not used
- 18 OFCOM UK (UK)
- 19 Bundesministerium für Wirtschaft, Familie und Jugend (AT)
- 20 Consumer Rights Protection Center (LT)
- 21 FOD Economie (BE)

1.4. Overall structure of Joint Action / Schedule

The campaign was planned to last 20 months and it started on the 1st of January 2016. The activities of the project were divided into 5 distinct work packages (WP). During the first 4 months of the project the Code of Practice, data input forms and sampling plan were finalized, a market survey was performed and the samples were selected. The DoC and relevant parts of technical documentation of the selected EUT were requested from suitable economic operator. MSAs also prepared the selection criteria for the test laboratories to be used in the action.

During the next 9 months, the samples were tested by the selected test laboratories. Also the administrative requirements (DoC, technical documentation, instructions and markings) were assessed. The obtained results of testing and administrative assessment have been evaluated and filled in the data input forms (EMC DIFs).

During the last 7 months of the project all results of testing and administrative assessment have been collected together and the final report of the joint action has been prepared. MSAs also carried out

national enforcement measures (if necessary). The results of the campaign will be published widely throughout Europe and the other countries where the products originate.

The 5 distinct work packages and timing of the work package are depicted in the following figures:

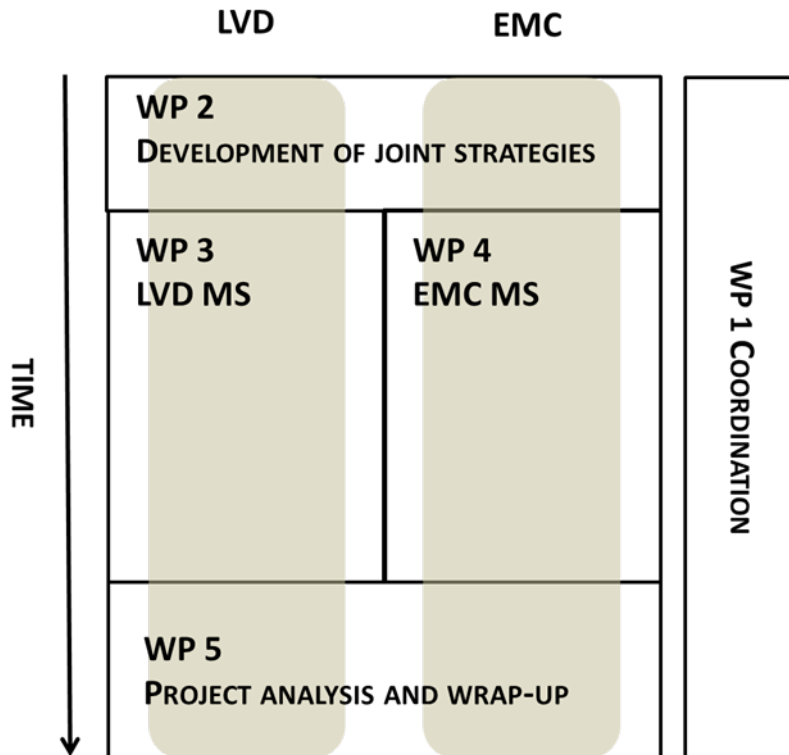


Fig.2. Illustration of the scheme applied in JA.

WP No.	Work package title	2015			2016												2017							
		10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
1	Project co-ordination and management																							
2	Development of joint strategies	(X)	(X)					X																
3	LVD MS activities													X										
4	EMC MS activities												X											
5	Project analysis and wrap-up																							X

X - project meeting

Note. Kick-off meeting (X) of the JA was held in two parts (EMC -10/2015 and LVD - 11/2015) before the official start of the project on January 1, 2016.

Fig.3. Time schedule of JA.

1.5. Sampling

The focus of the project was on LED floodlights for fixed installation (as well as portable and rechargeable LED floodlights). The primary purpose of the campaign was to assess the compliance of the samples taken from the European market, with the provisions of the EMC (2004/108/EC) and LV (2006/95/EC) Directives. The selected LED floodlights had to obviously fall under both EMC and LV Directives. The number of LED floodlights was limited to 5 for each participating MSA. More samples could be selected and tested on MSA's own account. It has also been agreed that the selected LED floodlights should have rated wattage (power) less than or equal to 50W or otherwise clearly intended to be used by consumers.

The market surveillance inspectors visited shops, manufacturers, importers, wholesalers, retailers and online shops to acquire samples as planned. The samples were acquired from the national markets according to the commonly agreed selection criteria. To avoid testing and investigation of the same LED floodlight many times, the details of the acquired LED floodlights were immediately filled in the ICSMS system. The project code JA2015 Floodlights had to be added into ICSMS field GEN 11. From the ICSMS the market surveillance inspectors of all the participating authorities were able to see (almost real time) those LED floodlights that have already been selected.

The selection was based on “risk based” approach with the target to try to identify the LED floodlights with a high probability of being non-compliant. E.g. the following criteria were applied:

- new (“private label”) brands
- customer complaints
- inadequate or “suspicious” labelling/markings
- previous MS data (national campaigns, LVD notifications, ICSMS data, RAPEX notifications)
- price and appearance (if deviating considerably from the “normal or standard” level)

1.6. Number of assessed samples

The total of 90 LED floodlights were tested in the project. LVD safety testing was performed for 87 floodlights and EMC testing was made for 85 floodlights.⁴ The administrative requirements were evaluated for 85 floodlights.

⁴ This difference in numbers of performed LVD and EMC tests is due to the fact that from DK only a LVD authority and from the UK only an EMC authority took part in the project.

2. Assessed requirements

2.1. EMC – technical requirements

For the purposes of the campaign it was agreed to assess compliance with the EMC essential requirements (only emission) by measuring against the harmonised standards according to the DoC issued by the manufacturer. Electrical lighting equipment has its own product family standard. The emission measurement has been carried out in accordance with harmonised standards EN 55015 and EN 61000-3-2.

To assist in achieving the maximum consistency of results between different testing laboratories and to simplify reporting procedures, products have been tested to the full and exact testing procedures of the appropriate parts of the relevant harmonised standards.

Harmonised RF emission standards for LED floodlights:

EN 55015 (Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment) is a product family standard for electrical lighting equipment. For “harmonics” EN 61000-3-2 (Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)) can be used.

Actual situation for conducted and radiated emissions test:

EN 55015:2013

EN 55015:2006 + A1:2007 + A2:2009 could be used until 12.6.2016

EN 55015:2006 + A1:2007 could appear in DoC for products placed on the market before 1.3.2012

EN 55015:2006 could appear in DoC for products placed on the market before 1.5.2010

The requirements for radiated emissions in the frequency range from 30 MHz up to 300 MHz can be evaluated either by application of the measurement method for the radiated disturbance field strength as specified in the chapter 4.4.2 of EN 55022 or by application of the alternative CDN test method as specified in Annex B of the standard.

The radiated emissions in the frequency range from 30 MHz up to 300 MHz have been measured according to technical documentation with same method than manufacturer has used. If the technical documentation was not available, radiated emission has been measured according to method for the radiated disturbance field strength as specified in the chapter 4.4.2 of EN 55022.

Actual situation for harmonic current emissions test:

EN 61000-3-2:2006 + A1:2009 + A2:2009

EN 61000-3-2:2006 could appear in DoC for products placed on the market before 1.7.2012

EN 61000-3-2:2000 + A2:2005 could appear in DoC for products placed on the market before 1.2.2009

According to the EN 61000-3-2 standard, if active input power of lighting equipment ≤ 25 W, the limits apply only to discharge lighting equipment. So, if LED floodlights had an active input power ≤ 25 W harmonic current emission test was not applicable.

The study on harmonics for flood lights with ≤ 25 W input power was voluntary and it has been carried out on MSA's own account. The aim of this study is to repeat the earlier study on harmonics for LED lights.⁵

2.2. LVD - technical requirements

The applicable safety standard for the low power (< 50 W) LED floodlights was selected to be EN 60598-2-5 (Luminaires -Particular requirements -Floodlights) along with EN 60598-1 (Luminaires - General requirements and tests).⁶ Standard version to be applied depended on the DoC issued by the manufacturer. If no DoC was available, EN 60598-2-5:1998 was applied. The applicable standard versions were as follows:

- EN 60598-2-5:1998 in conjunction with EN 60598-1:2008 + A11:2009
- EN 60598-2-5:2015 (dow date 10.9.2018) in conjunction with EN 60598-1:2015 (dow/doc date 20.10.2017)

The number of tests to be performed was limited to those ones which can be considered as most safety relevant and the result of which could be easily be collected and compared. As the current joint action involved many test laboratories (both commercial and authorities' own laboratories) in performing market surveillance tests, achievement of harmonized (uniform) test results was of primary interest for the successful accomplishment of the joint action. To assure uniform initial evaluation of the shortcomings found in the testing the Failure Code List (FCL)⁷ was employed. The discovered defects were classified by test laboratories into three categories: (a) defects that endanger the safety (serious criticism), (b) defects that may endanger the safety (criticism) and (c) defects that do not significantly endanger the safety (remark). This classification follows the practice of grading the most common shortcomings and the severity of the associated risks for electrical products as documented in the Failure Code List of Annex F in the Book on Best Practice Techniques in Market Surveillance (PROSAFE). FCL is a tool to make a connection between harmonized standards and risk assessment. It should be emphasized that "the FCL code" is not a comprehensive risk assessment (RA). The final RA must be done by the Market Surveillance Authority.

The test report form based, in part, on the IECEE (IEC System of Conformity Assessment for Electrotechnical Equipment and Components) test report form No. IEC 60598_2_5D was compiled and used in reporting the test results.

⁴ During the 4th EMC Market Surveillance Campaign 2011 the study on harmonics demonstrated that almost one out of two samples (46.6%) of LED lighting products tested, exceeded the limits that would have been applicable for discharge lighting equipment. This is clear evidence for the need to revise harmonised standard EN61000-3-2, and to include LED lighting equipment with a power smaller or equal than 25W.

⁶ EN 60598-2-5 specifies safety requirements for Floodlights for use with electrical light sources on supply voltages not exceeding 1000V. It is applied in testing of "real floodlights" that are used to illuminate large sport fields (e.g. football stadiums). There is a OSM/LUM decision sheet 246/03 that indicates that the applicable standard for the majority of the group is IEC 60598-2-5. Many times, (especially in market surveillance testing), small floodlights have been regarded as "fixed or portable general purpose luminaires" and EN 60598-2-1 or EN 60598-2-4 has been applied, respectively.

⁷ Annex F in the EMRAS Best Practice Book "Best practice techniques in market surveillance" that has been published by PROSAFE in the framework of EMARS1 project.

The performed tests were selected from the following clauses from EN 60598-2- 5 (EN 60598-1):

- Clause 5.5 (3) Marking and instructions
- Clause 5.6 (4) Construction
- Clause 5.7 (11) Creepage distances and clearances
- Clause 5.8 (7) Provision for earthing
- Clause 5.10 (5) External and internal wiring
- Clause 5.11 (8) Protection against electric shock
- Clause 5.12 (12) Endurance test and thermal test
- Clause 5.13 (9) Resistance to dust, solid objects and moisture
- Clause 5.14 (10) Insulation resistance and electric strength

2.3. Administrative requirements

Administrative compliance has been checked against

- Traceability
 - Identification (type, batch or serial number)
 - Name or registered trademark and address of the manufacturer/importer
- CE marking
- EU Declaration of Conformity
- Technical Documentation

3. Campaign results

3.1. EMC – technical requirements

The measured result was compared directly with the limit in the harmonised standard without taking into account the measurement uncertainty. A failure was recorded if any emission exceeded a certain limit when measured with the appropriate detector.

85 LED floodlights were assessed for emissions, 35 of those (41%) were compliant with the emission requirements.

Compliance with emissions requirements		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
85	35	41

3.1.1. Conducted emissions (9 kHz - 30 MHz)

85 LED floodlights were assessed for conducted emissions, 40 of those (47 %) were compliant with the requirements.

Compliance with conducted emissions test		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
85	40	47

3.1.2. Radiated Emissions (30 - 300 MHz)

82 LED floodlights were assessed for radiated emissions, 45 of those (55 %) were compliant with the requirements.

Compliance with radiated emissions test		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
82	45	55

3.1.3. Harmonic Current Emissions

According to the EN 61000-3-2 standard, if active input power of lighting equipment ≤ 25 W, the limits apply only to discharge lighting equipment. So if LED floodlights may have an active input power ≤ 25 W harmonic current emission test is not applicable.

From assessed LED floodlights 43 products have active input power less than 25 W. 37 of those (86 %) were compliant with the harmonic current emissions requirements.

Compliance with harmonic current emissions		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
43	37	86

3.1.4. Study: Harmonic Current Emissions

The study on harmonics for LED flood lights with ≤ 25 W input power was voluntary and it has been carried out on MSA's own account. The aim of this study was to repeat the earlier study on harmonics for LED lights. During the 4th EMC Market Surveillance Campaign 2011 the study on harmonics demonstrated that almost one out of two samples (46.6%) of LED lighting products tested, exceeded the limits.

18 LED floodlights were assessed for harmonic current emissions, 14 of those (78 %) were compliant with the requirements.

Compliance with harmonic current emissions		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
18	14	78

The study on harmonics demonstrated that almost a quarter part (22 %) exceeded the limits. This is anyway better result than the result of the earlier study on harmonics.

3.2. LVD - technical requirements

The compilation of the LVD safety test results is shown in Fig. 4. The most critical defect found in the testing of the luminaire has been assigned to give the overall failure code for the luminaire. E.g. if the tested luminaire has both class 2 defect(s) and class 1 defect(s), an overall code of 2 has been assigned to it. It should be noted that several LED floodlights failed in many tests (typically in 5 -12 tests of 19 performed tests).

It can be seen that

- Only 9 of 87 tested LED floodlights showed no defects in the performed” LVD safety tests”
- 76% of the tested LED floodlights had defect(s) that may endanger or endanger the safety of the user (FCL 2 or FCL 3)

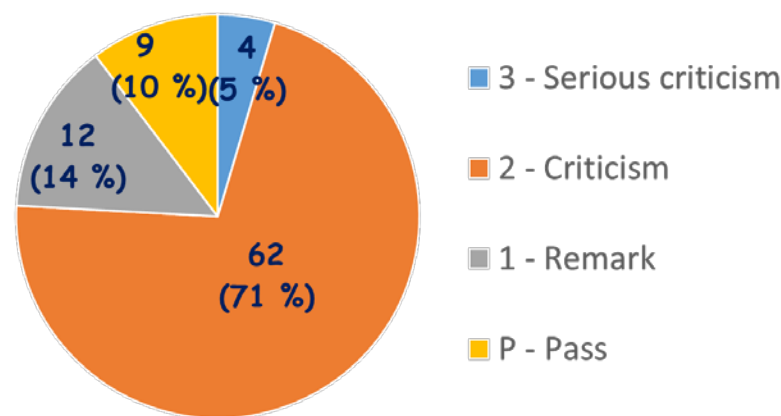


Fig. 4. The compilation of LVD safety test results (tests based on EN 60598-2-5 along with EN 60598-1). The coding (classification) of defects (shortcomings) has been done according to the Failure Code List (FCL): (1) Remark / Defects that do not significantly endanger the safety, (2) Criticism / Defects that may endanger the safety and (3) Serious criticism / Serious defects that endanger the safety. The most critical defect found in the testing has been assigned to give the overall code for the luminaire.

In the following sections the more detailed test results are represented. For each selected test (i.e. a clause or a set of requirement(s) from the applicable test standard EN 60598-2-5) the overall failure code of the LED floodlight has been determined by the most severe defect detected in testing. A FCL code is assigned for the floodlight if a defect or defects were found. The found defects may endanger the safety of the users by posing a risk of electric shock in case the LED floodlights fails.

The code P (pass) in the following graphs means that the tested floodlight passed the test and the code NA (not applicable) means that the test laboratory evaluated that this particular test was not applicable for the LED floodlight under test.

3.2.1. Marking

The markings of the LED floodlights were evaluated according to requirements specified in the clause 5.5 (3.2 & 3.3) of EN 60598-2-5 (EN 60598-1).

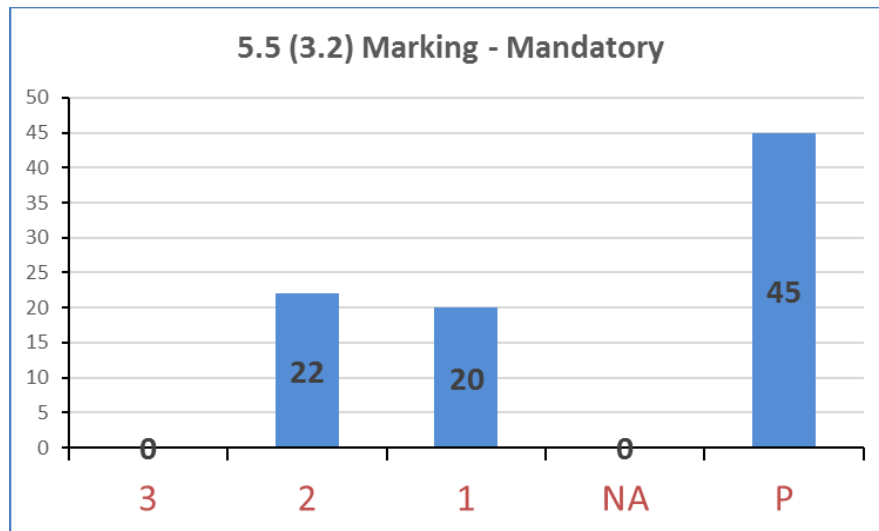


Fig. 5. The compilation of test results for mandatory markings. Existence of mandatory markings (such as mark of origin, rated voltage, IP number, maker's model number or type reference, rated wattage) as well as position and format of markings have been checked.

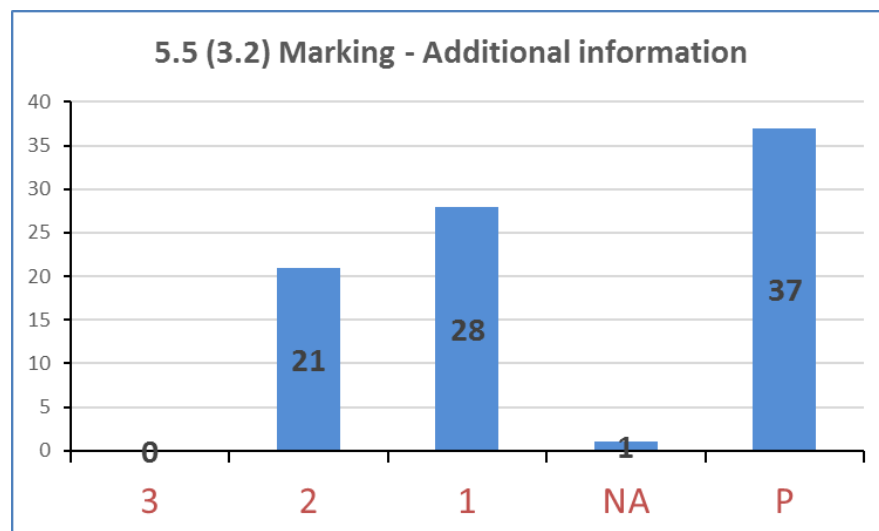


Fig. 6. The compilation of test results for markings of additional information. All details which are necessary to ensure proper installation, use and maintenance shall be given on the luminaire or in the manufacturer's instructions provided with the luminaire.

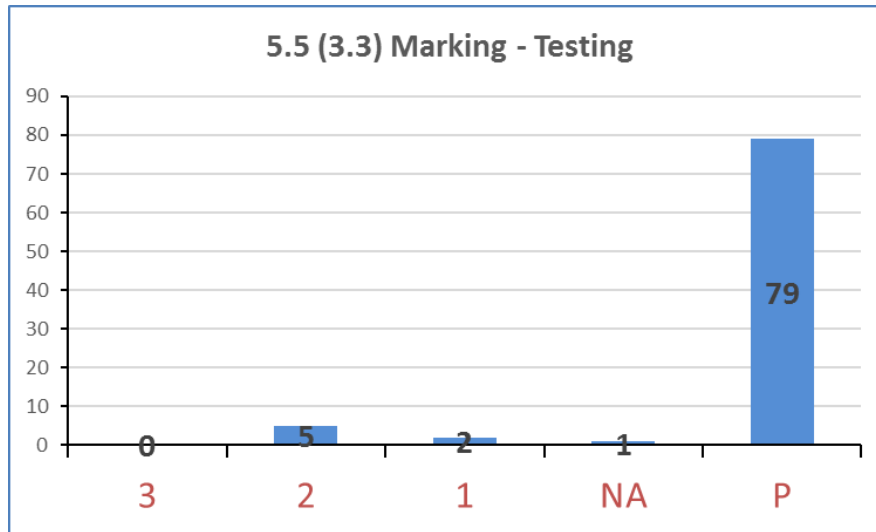


Fig. 6. The compilation of test results for testing of markings. The durability of the marking shall be adequate.

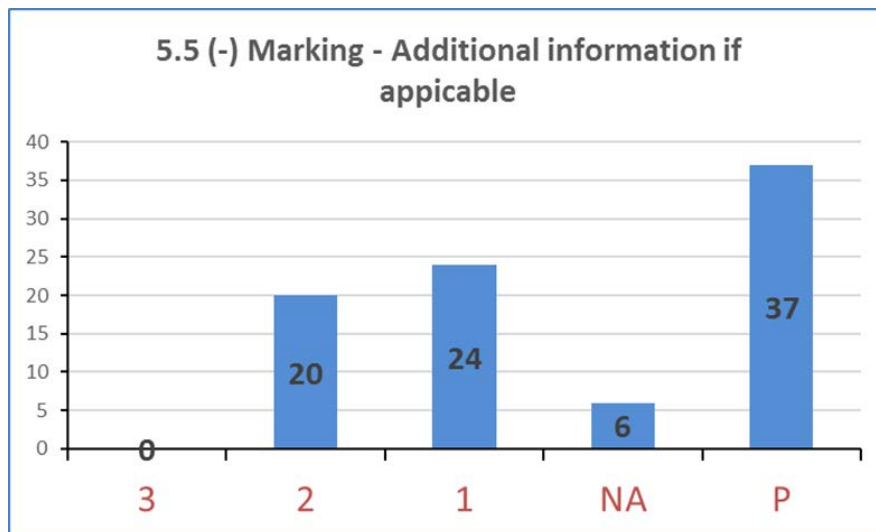


Fig. 7. The compilation of test results for markings explicitly intended for floodlights. To ensure proper use and maintenance, some additional details shall also be marked on the floodlight or otherwise made available to the purchaser.

3.2.2. Construction

The compliance with the general constructional requirements of the LED floodlights was evaluated by checking and testing as required in clause 5.6 (4.3, 4.7, 4.11, 4.12,) of EN 60598-2-5 (EN 60598-1).

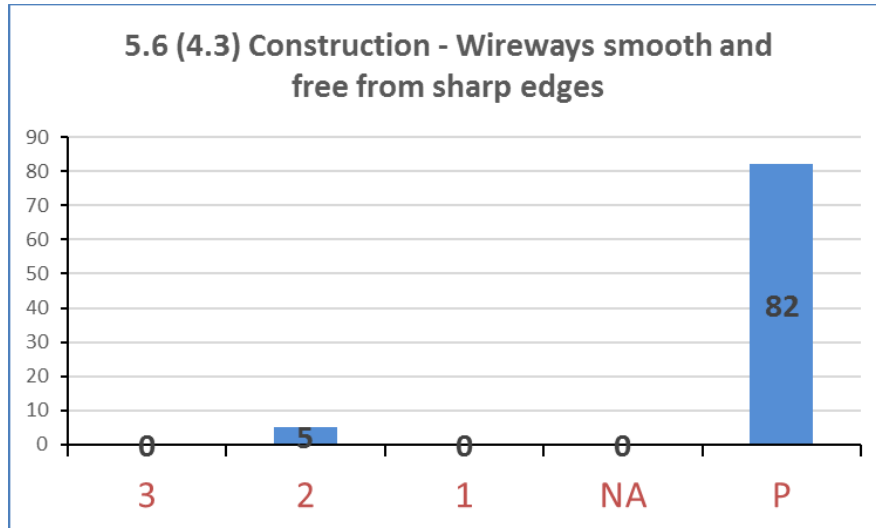


Fig. 8. The compilation of test results for checking the wireways to be smooth and free from sharp edges. Wireways shall be smooth and free from sharp edges, burrs, flashes and the like, which might cause abrasion of the insulation of the wiring and parts such as metal set screws shall not protrude into wireways.

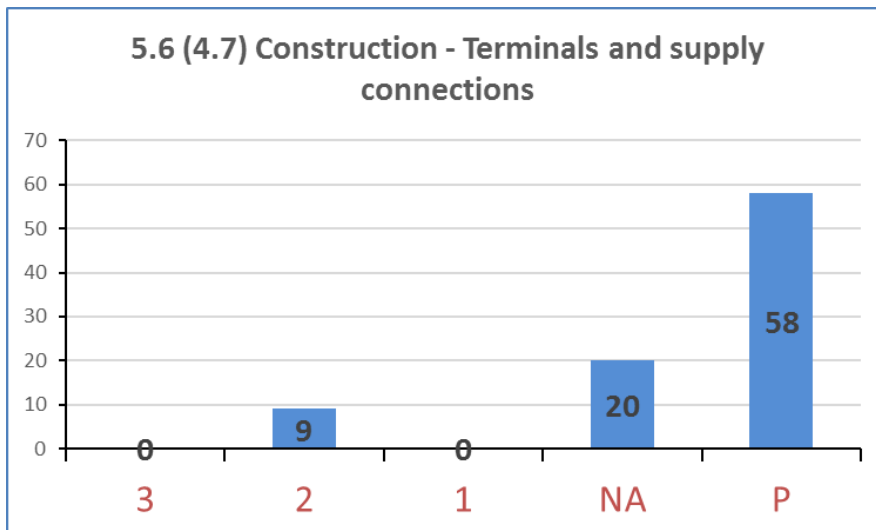


Fig. 9. The compilation of test results for checking the terminals and supply connections. In portable luminaires of class I and II and in fixed luminaires of class I and II that are frequently adjusted, adequate precautions shall be taken to prevent metal parts from becoming live due to a detached wire or screw. This requirement applies to all terminals.

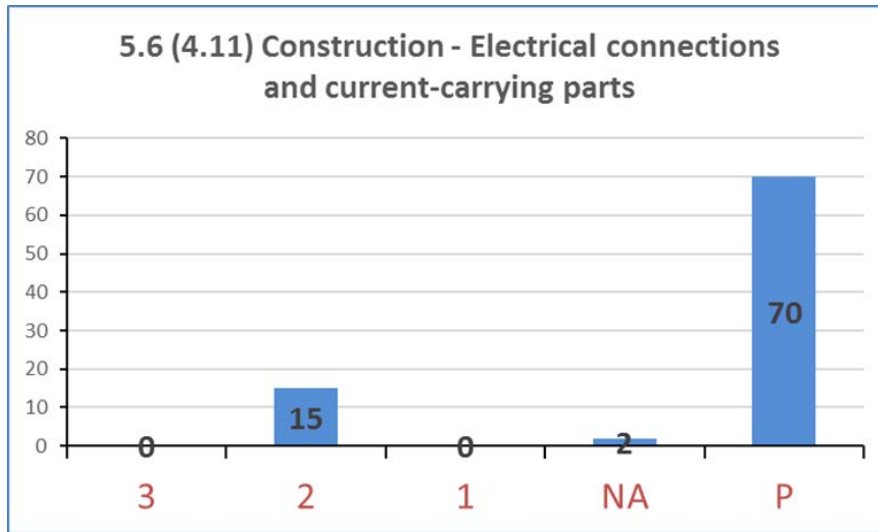


Fig. 10. The compilation of test results for checking the electrical connections and current-carrying parts. Electrical connections and current-carrying parts shall comply with constructional and material requirements as of 4.11 of EN 60598-1.

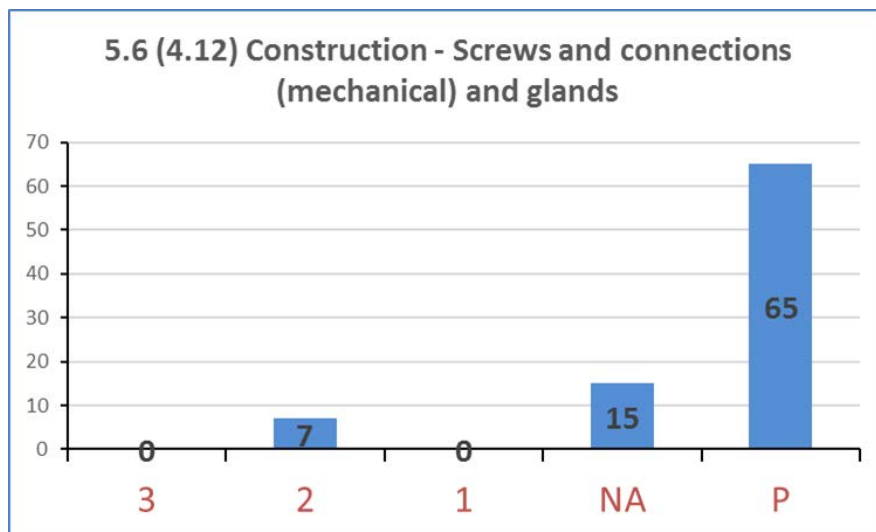


Fig. 11. The compilation of test results for checking screws, mechanical connections and glands. Screws and mechanical connections, the failure, of which might cause the luminaire to become unsafe, shall withstand the mechanical stresses occurring in normal use.

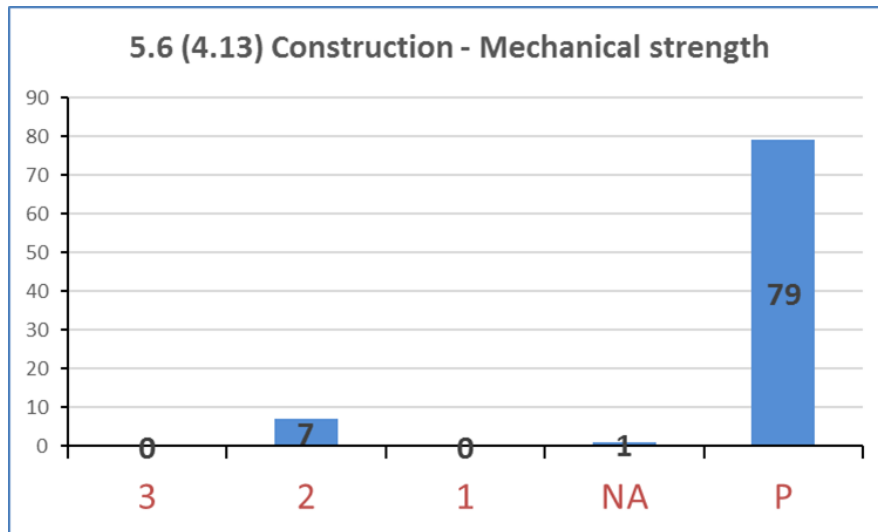


Fig. 12. The compilation of test results for checking the mechanical strength. The luminaires shall have the adequate mechanical strength i.e. being so constructed that they remain safe after rough handling that may be expected in normal use.

3.2.3. Creepage distances and clearances

The clause 5.7 (11.2) of EN 60598-2-5 (EN 60598-1) specifies minimum requirements for creepage distances and clearances in LED floodlights. The values given are the absolute minimum.

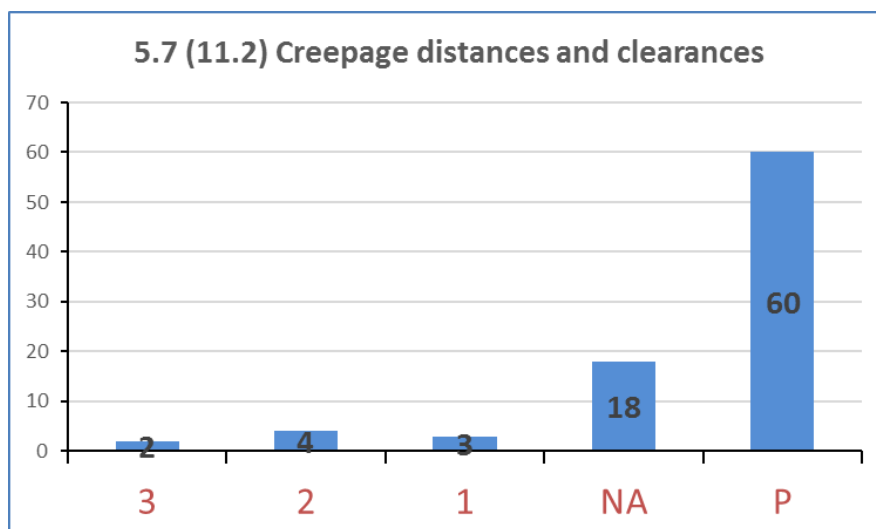


Fig. 11. The compilation of test results for checking creepage distances and clearances. The parts detailed in the standard (e.g. live parts of different polarity and live parts and accessible metal parts) shall be adequately spaced. Creepage distances and clearances shall be not less than the values given in the standard.

3.2.4. Provision for earthing

The requirements for earthing are specified in clause 5.8 (7.2) of EN 60598-2-5 (EN 60598-1).

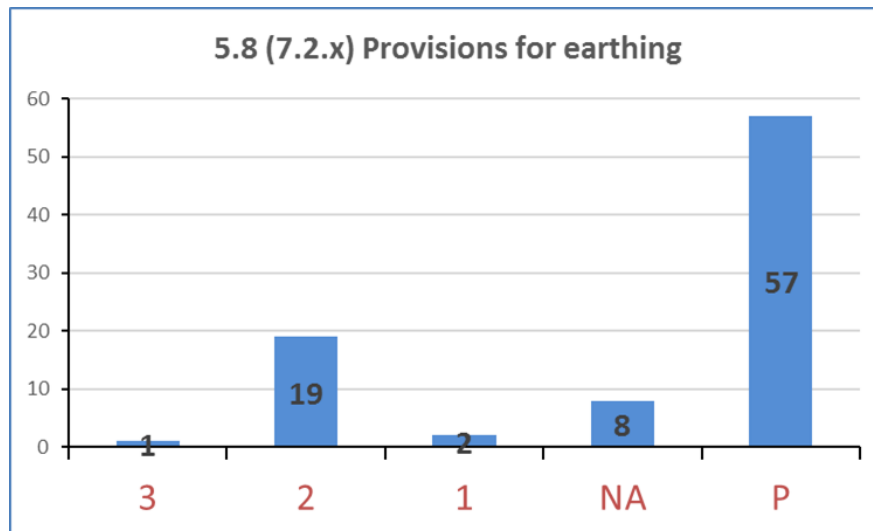


Fig. 12. The compilation of test results for checking provisions for earthing. Metal parts of class I luminaires which are accessible when the luminaire has been mounted, or is opened for replacement of a lamp or for cleaning purposes, and which may become live in the event of an insulation fault, shall be permanently and reliably connected to an earthing terminal or earthing contact.

3.2.5. External and internal wiring

The clause 5.10 (5.2 and 5.3) of EN 60598-2-5 (EN 60598-1) specifies general requirements for the electrical connections to a supply and for the internal wiring of LED floodlights. The sub clause 5.2 of EN 60598-1 defines requirements for supply connections and other external wiring and the sub clause 5.3 of EN 60598-1 defines the requirements for internal wiring.

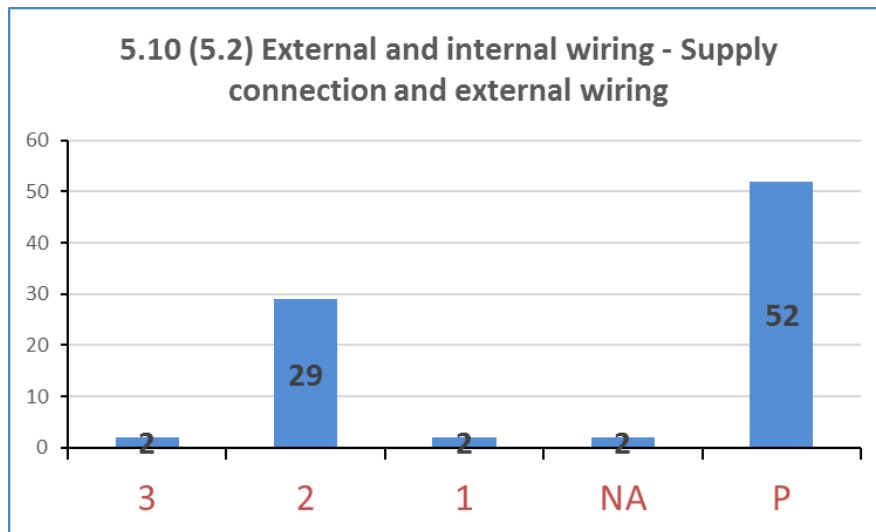


Fig. 13. The compilation of test results for checking supply connections and other external wiring. E.g. the following issues were inspected: means of connection, type of cable, type of attachment, X, Y or Z, cable entries, insulating bushings and cord anchorage.

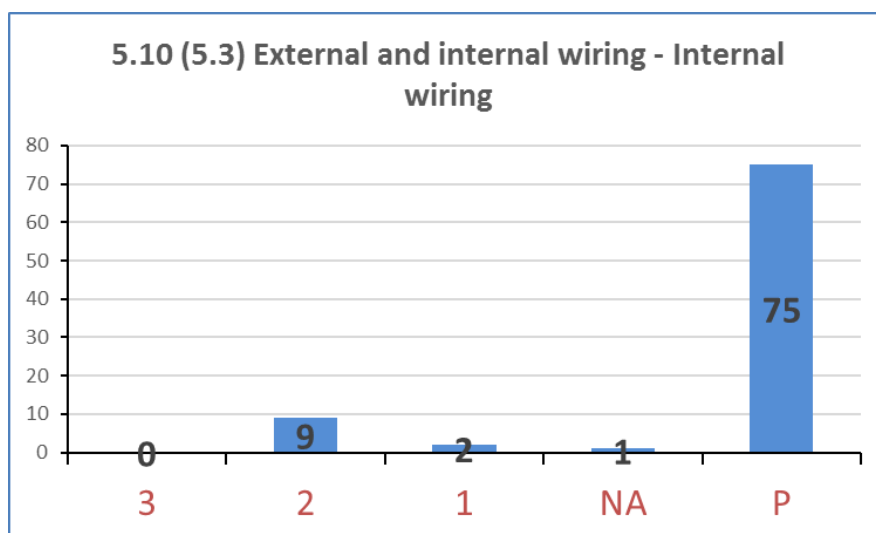


Fig. 14. The compilation of test results for checking internal wiring. E.g. the following issues were inspected: internal wiring being of suitable size and type, sharp edges, insulating bushings and joints and junctions being effectively insulated.

3.2.6. Protection against electric shock

The clause 5.11 (8.2) of EN 60598-2-5 (EN 60598-1) specifies general requirements for protection against electric shock from LED floodlights.

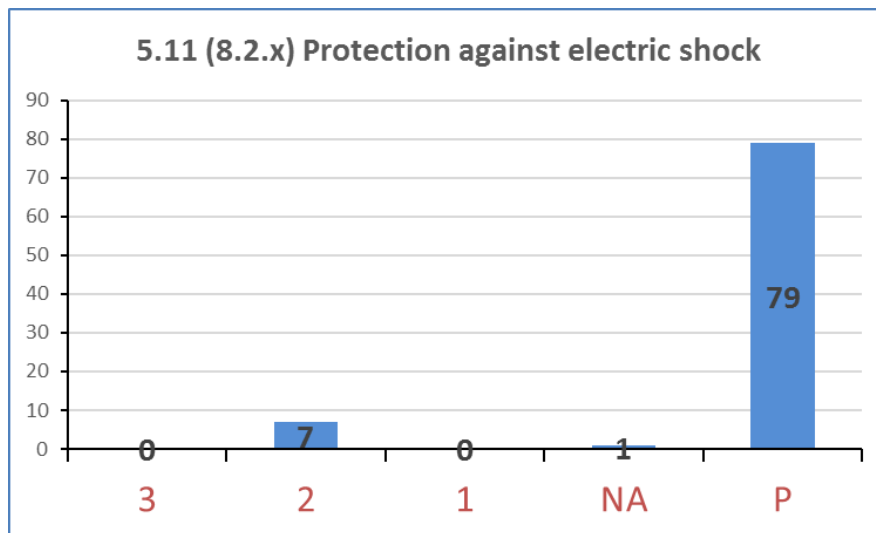


Fig. 15. The compilation of test results for checking protection against electric shock. LED floodlights shall be so constructed that the live parts are not accessible when the LED floodlight has been installed and wired for normal use, and when it is opened for replacing replaceable light sources. In addition, basic insulated parts shall not be used on the outer surface of the LED floodlight without appropriate protection against accidental contact.

3.2.7. Endurance test

The clause 5.12 (12.3) of EN 60598-2-5 (EN 60598-1) specifies endurance and thermal tests for LED floodlights.

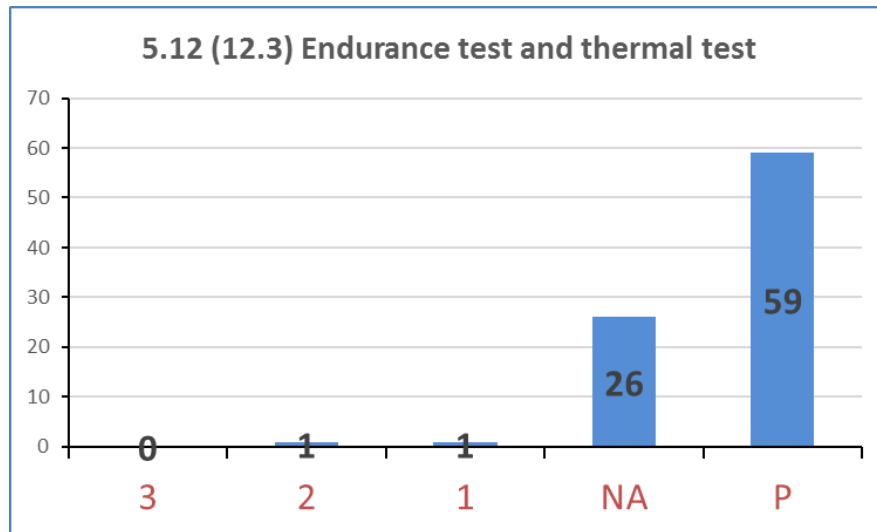


Fig. 16. The compilation of results for endurance test and thermal test. Under conditions representing cyclic heating and cooling in service, the floodlight shall not become unsafe or fail prematurely.

3.2.8. Resistance to dust and moisture

The clause 5.13 (9.2) of EN 60598-2-5 (EN 60598-1) specifies the requirements and tests for LED floodlights classified as resistant to dust and moisture. It should be noted that LED floodlights for outdoors shall have the protection against the ingress of moisture at least equivalent to IPX3.

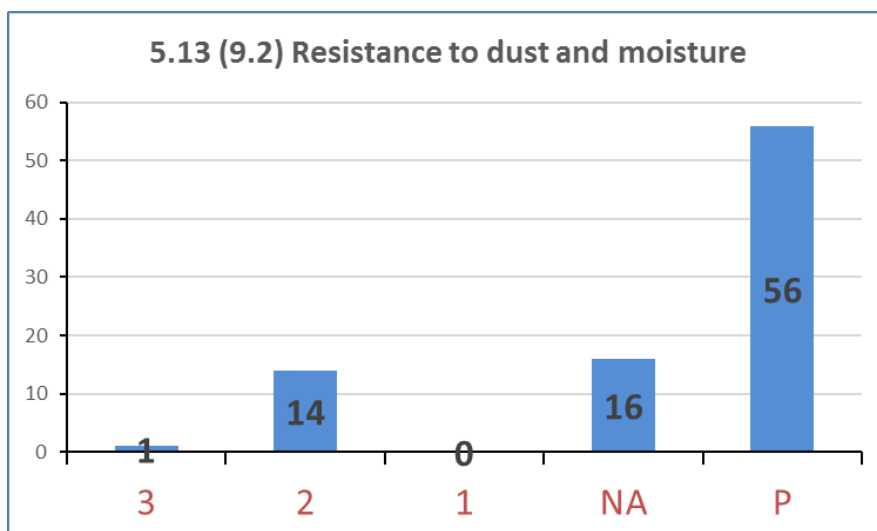


Fig. 17. The compilation of test results for checking resistance of LED floodlights to dust and moisture (i.e. IP test). LED floodlights for outdoors shall have the protection against the ingress of moisture at least equivalent to IPX3.

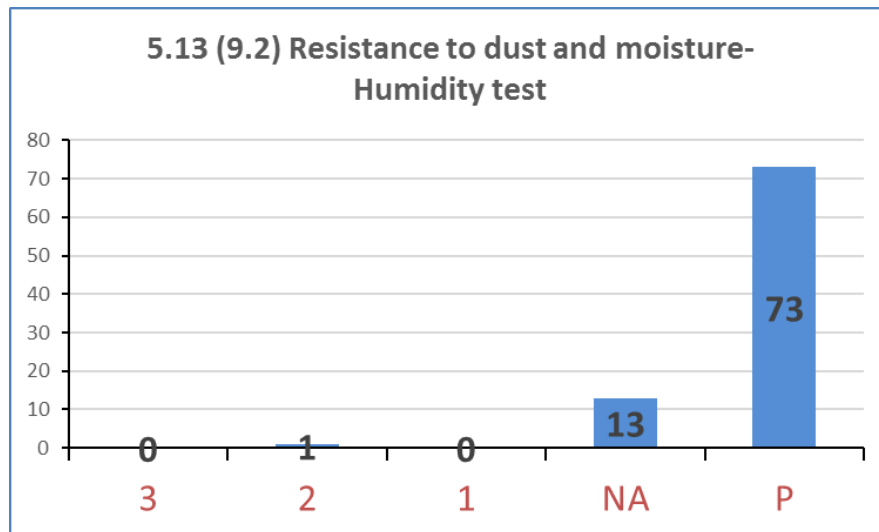


Fig. 18. The compilation of test results for checking resistance to dust and moisture (humidity test). LED floodlights shall be proof against humid conditions which may occur in normal use.

3.2.9. Insulation resistance and electric strength

The clause 5.14 (10.2.1 and 10.2.2) of EN 60598-2-5 (EN 60598-1) specifies requirements and tests for the insulation resistance and electric strength for the LED floodlights.

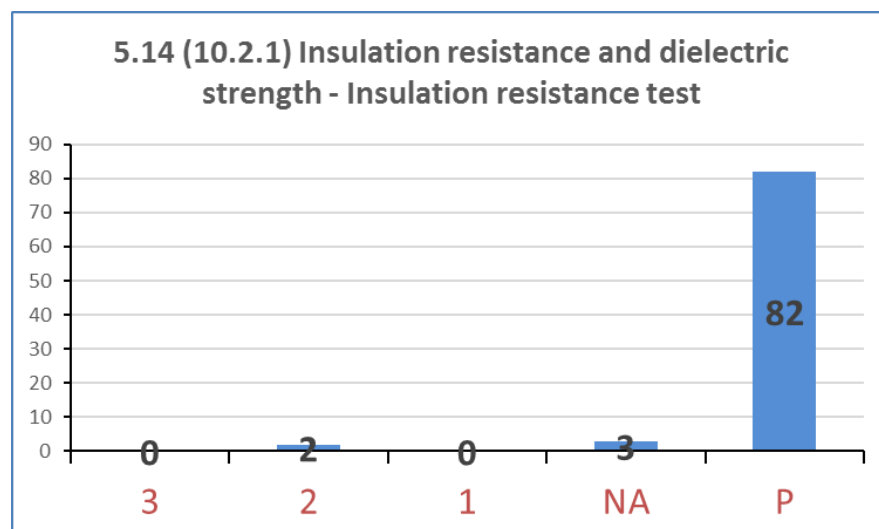


Fig. 19. The compilation of test results for checking insulation resistance. The insulation resistance between different parts as specified in clause 10.2.1 shall be at least the value given in the standard.

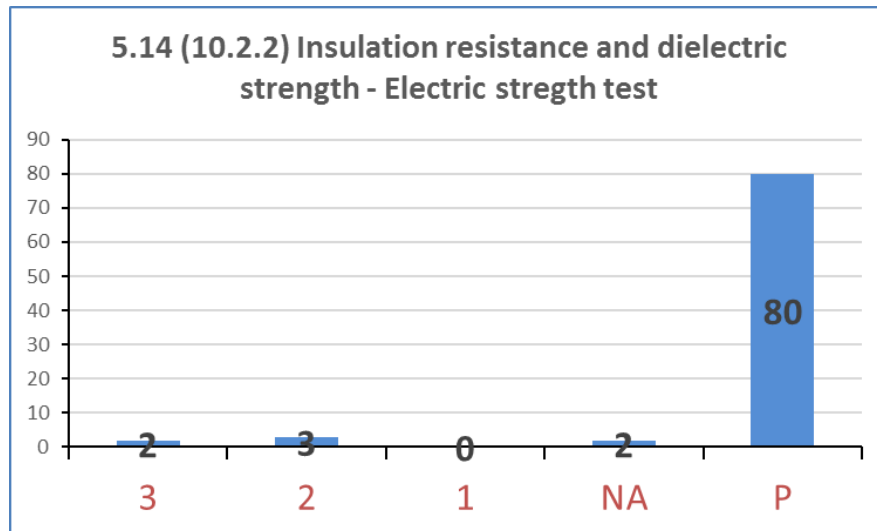


Fig. 20. The compilation of test results for electric strength. The electric strength between different parts as specified in clause 10.2.2 shall be at least the value given in the standard.

3.3. Summary of tests

It should be noted that both LVD and EMC tests were performed for 82 LED floodlights and the combined test results are as follows:

- 45 LED floodlight models failed in both tests
- No issues were found for only 5 models (if both tests are considered)
- 33 models failed only in LVD test (no issues in EMC test)
- 4 models failed only in EMC test (no issues in LVD test)

3.4. Administrative requirements

Administrative compliance was checked against traceability (identification markings (type, batch or serial number) and name or registered trademark and address of the manufacturer/importer), the presence and format of CE marking, the availability and compliance of the EU Declaration of Conformity (DoC) and technical documentation (TD).

46 % of the LED floodlights fulfilled the assessed administrative requirements.

Compliance with administrative requirements		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
85	38	46

3.4.1. Country of origin (Made in...)

MSA had to report on the country where the product has been manufactured; the information “Made in” present either on the EUT itself, on its packaging or on the accompanying documents and finally from the DoC (where available). The “country of origin” therefore refers not generally to the economic operator who is responsible for placing the product on the EU market.

A total of eighty-five (85) products were selected and evaluated, as follows

Country of origin	Number of assessed LED floodlights	Compliance level of assessed administrative requirements
China	64	36 (56 %)
EU	4	2 (50 %)
Unknown	17	1 (6 %)
All origins	85	38 (46 %)

Most of the products have been manufactured in China (75 %) or country of origin is unknown (20 %). Only a few sets of equipment were manufactured in Europe (5 %).

When analysing the results, it was recognised a strong correlation between when country of origin was unknown and poor compliance level of assessed administrative requirements. Only one product with unknown origin was compliant with assessed administrative requirements

3.4.2. Traceability Requirements

Manufacturers shall ensure that products which they have placed on the market bear a type, batch or serial number or other element allowing its identification. Manufacturers and importers (if manufacturer is not established in the EU) shall indicate, on the product, their name, registered trade name or registered trade mark and the postal address at which they can be contacted.

A total of eighty-five (85) products were assessed, as follows

Compliance of traceability requirements		
Requirement of traceability	Number of compliant LED floodlights	Compliance (%)
Identification requirements	78	92
Name of the manufacturer	68	80
Address of the manufacturer	59	69
Name of the importer	79*	93

Address of the importer	75*	88
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* In 47 cases the information of importer was not required, because the manufacturer is established in the EU.

According to the assessed results the name of the manufacturer or importer has been indicated better than the address of manufacturer or imported. It is also recommended to include a website address on the product.

3.4.3. CE marking

All but one of the assessed LED floodlights were CE marked, 2 did not fulfilled the formatting requirements, 82 products (96 %) were assessed as compliant.

Compliance with CE marking requirements					
Number of assessed LED floodlights	Missing CE mark	Not compliant CE mark layout	Not compliant height of CE mark	Number of compliant CE mark	Compliance (%)
85	1	2	2	82	96

3.4.4. EU Declarations of Conformity (DoC)

MSA assessed 85 LED floodlights against the DoC requirements. From 85 requested DoC 70 (83 %) were made available. From those 70 available, 54 were compliant, this represents 64 % overall DoC compliance.

Compliance with DoC requirements*				
Number of assessed LED floodlights	DoC available	DoC available (%)	Number of compliant DoC	Overall DoC compliance (%)
84	70	83	54	64

* Assessed DoC requirements:

- Reference to EMCD and LVD
- Identification of the product
- Name and address of the manufacturer
- Dated reference to the specifications
- Date of declaration
- Identity of the person empowered to bind the manufacturer
- Signature of the person empowered to bind the manufacturer

3.4.5. Technical documentation (TD)

MSA assessed 55 LED floodlights against the TD requirements. From 55 requested TD 36 (65 %) were made available. From those 36 available, 32 were compliant, this represents 58 % overall TD compliance.

Compliance with TD requirements*				
Number of assessed LED floodlights	TD available	TD available (%)	Number of compliant TD	Overall TD compliance (%)
55	36	65	32	58

* Assessed TD requirements:

- General description of the products
- Evidence of compliance with harmonised standards (applied in full)
- Evidence of compliance with harmonised standards (applied in part)
- Description and explanation of the steps taken to meet the essential requirements of the directive (if manufacturer has not applied HS or has applied them only in part)
- Results of design calculations made, examinations carried out, test reports
- Statement from the notified body (if used)

3.5. Overall compliance

82 LED floodlights were assessed against technical (both EMC and LVD) and administrative requirements, 2 of those (2 %) were compliant with the assessed requirements.

Overall Compliance with requirements		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
82	2	2

4. Corrective Actions

Fig. 20 shows the summary of corrective actions made in the participating member states based on the test results and associated risk assessment. As many as 47 % of the tested LED floodlights were withdrawn from the European market. This clearly indicates that economic operators have not taken all EU requirements into account before placing the LED floodlights on the European market. The Market surveillance authorities considered that for only 10 % (9 pcs) of the assessed LED floodlights no market surveillance actions were required.

Fig. 21 and Fig. 22 depict the records of corrective actions based only on LVD or EMC test results, respectively. It can be seen more corrective actions were based on the defects found in the LVD tests. For 46% of “EMC tested” LED floodlight no corrective action was considered to be needed, whereas this was a case for only 13% “LVD tested” LED floodlights. Fig. 23 shows the summary of “combined LCD and EMC actions”. There were 42 LED floodlights for which the corrective actions were based on the both LVD and EMC test results.

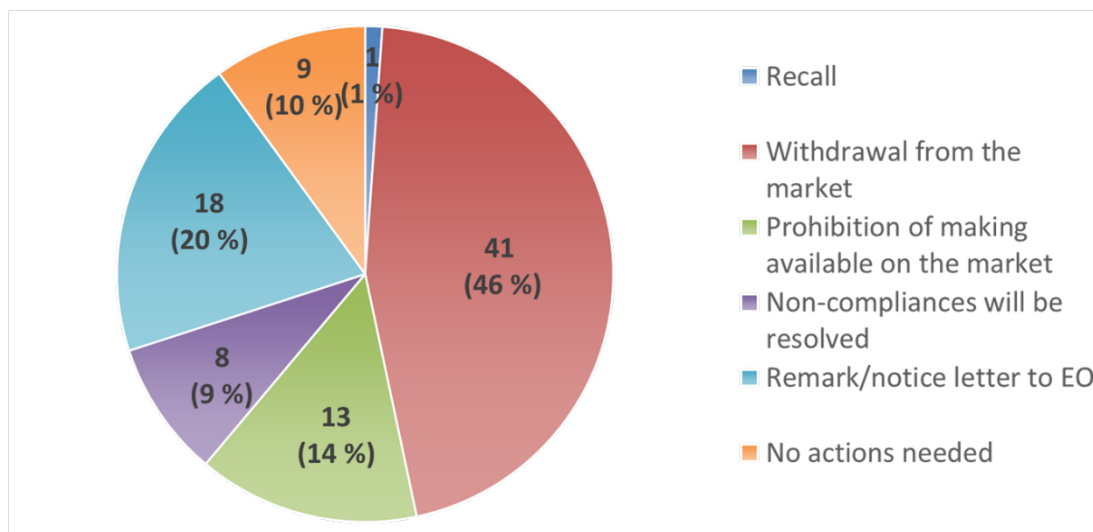


Fig. 20. The compilation of corrective actions done based on the test results and performed risk assessment for the 90 tested LED floodlights. The projects yielded 1 recall, 41 withdrawals from the market and 13 prohibitions of making the LED floodlights available on the market. The total of 30 of the aforementioned actions were ordered by the authority and 25 of the actions were taken voluntarily by the economic operators.

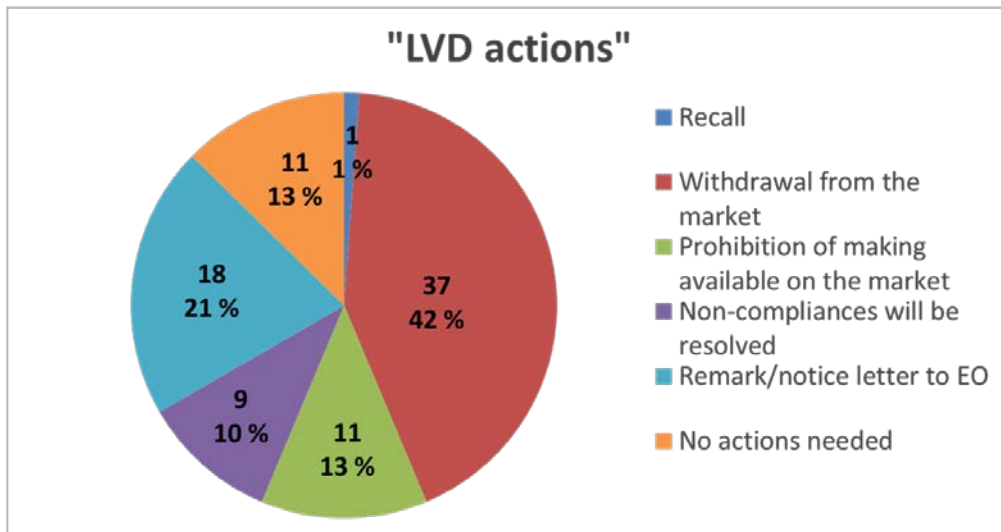


Fig. 21. The summary of corrective actions done based **only on the LVD** test results i.e. no EMC test results have been considered (87 LED floodlights).

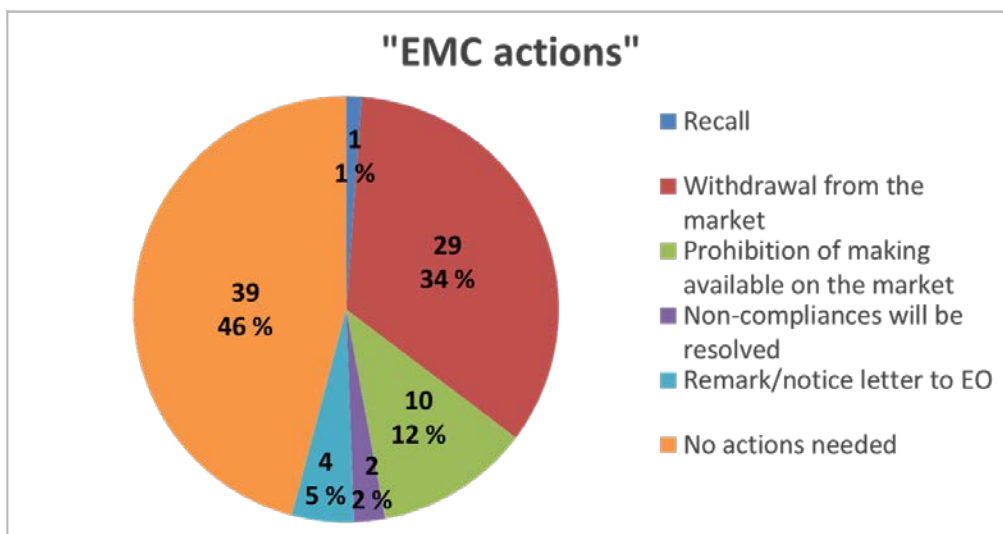


Fig. 22. The summary of corrective actions done based **only on the EMC** test results i.e. no LVD test results have been taken into account (82 LED floodlights).

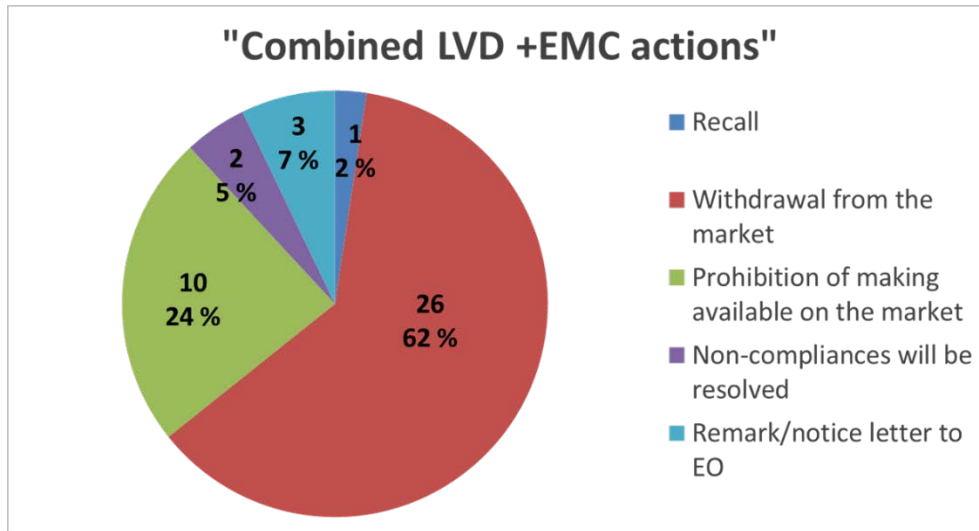


Fig. 23. The summary of corrective actions done based on **both** the LVD and EMC test results i.e. both LVD and EMC tests revealed so severe defects that required some corrective actions to be made. There were 42 LED floodlights for which the corrective actions were based on the both LVD and EMC test results.

5. Conclusions

- Only two LED floodlight models out of 90 were compliant with the all assessed requirements (LVD, EMC and administrative requirements)
- For 82 LED Floodlights both LVD and EMC tests were performed.
- More than half (59 %) of the products were assessed as non-compliant with EMC requirements.
- Most nonconformities encountered with EMC requirements were found in the conducted emissions test.
- The study on harmonics demonstrated that almost a quarter part (22 %) of the LED floodlights exceeded the limits.
- Only 9 of 87 tested LED floodlights showed no defects in the performed "LVD safety tests"
- 76% of the "LVD safety tested" LED floodlights had defect(s) that may endanger or endanger the safety of the user.
- More than half (55 %) of the LED floodlights failed in both tests (EMC+LVD).
- Only 5 LED floodlights were OK in both tests (33 LED floodlights failed only with LVD tests and 4 floodlights failed only with EMC tests).
- LED floodlights were mainly of Chinese and unknown origin.
- Almost a half (46 %) of the products met the administrative requirements.
- All but one assessed products (85) were CE marked (2 CE makings were incorrectly formatted).
- Approximately in one fifth (17 %) of the cases DoC was not provided yielding the overall DoC compliance of 64 %.
- Approximately in one third (35 %) of the cases technical documentation (TD) was not provided - overall TD compliance was 58 %.
- The project has expanded the co-operation between national EMC and LVD maker surveillance authorities.
- The project has been done by two different ADCO groups together, so best practices in executing joint market surveillance activities for the situation that more than one Directive is applicable has been developed.
- The use of ICSMS for sampling and information gathering was found to be very helpful. The role of ICSMS for the MS work has been emphasized during the execution of the campaign.
- The project increased the awareness of the economic operators concerned on the requirements of EU harmonization legislation for the LED floodlights. Many shortcomings in administrative requirements were due to a lack of information.
- Many non-compliant and unsafe LED products have been removed from the EU market.

6. Follow-up activities

- The results of the project should be published widely throughout Europe (especially consumer aspects).
- The results should also be actively disseminated to all responsible economic operators via various communication channels.
- European market surveillance authorities should take the results of this project into consideration when making their multi annual market surveillance plans as stated in the Regulation (EC) 765/2008.
- A similar campaign should be considered on the same basis after a certain period to assess the effect of this project on the European market.
- Market surveillance authorities should increase the usage of ICSMS for exchange of information.
- Market surveillance actions for LED floodlights should be continued.
- Some "follow-up" tests/evaluations should be made for those LED floodlight brands ("sister models") that failed in the tests.